

A REMARKABLE NEW DIMORPHIC EUPHORBIA
(EUPHORBIAEAE) FROM SOUTHERN MEXICO¹

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IN VIEW OF the large number of undetermined *Euphorbia* collections in most major herbaria, it is perhaps not surprising that a few common species remain undescribed. While preparing a monographic treatment of *Euphorbia* section TITHYMALOPSIS (Klotzsch & Garcke) Boissier, I recognized one such species allied to *E. sphaerorhiza* Bentham, a well-known species of the pine and oak forests of western Mexico.

Section TITHYMALOPSIS comprises 16 species of perennial herbs in the eastern and south-central United States, Mexico, and Guatemala that are characterized by an umbellate or dichasial inflorescence, five cyathial glands, undivided petaloid appendages, styles that are united at the base and divided for one third to one half of their length, and ovate, ecarunculate seeds that are irregularly tuberculate, shallowly pitted, or smooth (Huft, 1979). The five Mexican taxa are further distinguished by a globose root and variously pubescent inflorescences, cyathia, and capsules.

Euphorbia ixtlana Huft, sp. nov.

FIGURE 1.

Herba perennis, erecta. Radix globosa. Caules glabri vel villosi. Folia alternata vel opposita, raro ternata, inferiora fugacia, squamiformis, superiora supra glabra, subtus pilosa vel villosa; laminae dimorphae, formae duae in eadem plantae raro coaetanae, aliquot ovatae vel ovata-lanceolatae, margine dentato, hyalino, revoluta, ceterum lineares vel anguste lanceolatae, margine integro, revoluta. Stipulae glanduliformes, minutae. Inflorescentiae terminales, umbellatae, radiis (2-)3(-5), dichasialibus vel raro trichasialibus vel laterales, dichasiales, in nodis 1-3 infra umbellam ortae. Cyathia campanulata, extus dense villosa; glandulae 5; appendices supra albae, glabrae, delatae vel lanceolatae, subtus brunneae, margine albo villosa. Capsula viridis, in sicco brunnescens, pilosa vel glabra.

Erect perennial herb 18-45 cm high. Root globose, occasionally proliferating, (7-)10-18 mm high, (7.5-)11-17 mm thick, giving rise on upper end to short, erect rhizome 7-10(-30) mm long, from which arises a solitary (rarely 2) stem(s), this (0.8-)1(-1.6) mm in diameter at base, glabrous to villous, the hairs uniseriate, multicellular, somewhat flattened. Branching below inflorescence somewhat sparse; nodes below umbel (3 or) 4 to 6 (or

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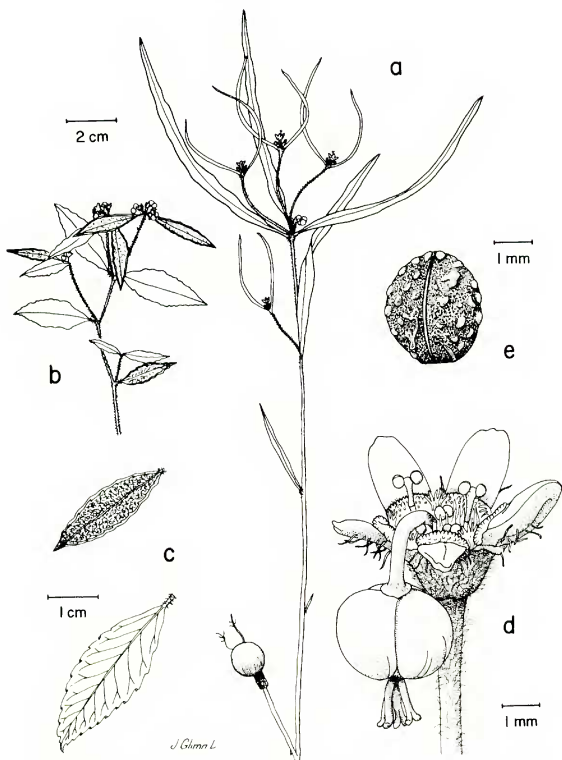


FIGURE 1. *Euphorbia ixtlana*: a, habit of linear-leaved form (Lundell 12289); b, inflorescence of ovate-leaved form (Lundell 12288); c, lower and upper surfaces of ovate leaf (Lundell 12288); d, cyathium with mature capsule (Cruden 1102); e, seed (Lundell 12288).

7); internodes (2.5-)3.5-6.5(-9) cm long. Leaves alternate or opposite (rarely ternate), progressively reduced from umbel downward; lower stem leaves fugacious, ascending or appressed, the lowest scalelike, 0.8-1.5 by ca. 1 mm; upper stem leaves and bracts glabrous above, moderately to densely pilose to villous below, petiolate; petiole 1-4 mm long, villous; blade dimorphic, the two forms occurring at same time in population but rarely on same plant—one form ovate to ovate-lanceolate, 15-36(-42) by 10-16 mm, 1.2-3 times as long as wide, the apex acute, the base cuneate, the margin dentate, hyaline, revolute, with teeth irregularly spaced, 6 to 12 per cm, acute and ascending but often appearing rounded due to revolute margin; the other form linear to lanceolate, 3-10 cm by 2-3 mm, 10-40 times as long as wide, the apex acute, the base narrowly cuneate, the margin entire, revolute. Stipules glanduliform, minute, ca. 0.3 by ca. 0.2 mm, often obscured by indument. Bracts similar to upper stem leaves, gradually reduced upward. Inflorescence a terminal umbel; rays (2 or) 3 (to 5), dichasial (rarely trichasial), forking 2 to 5 times; first internode (1.5-)4-6(-10) cm long, second usually much shorter, 2-5(-25) mm long; lateral inflorescences, if present, at 1 to 3 nodes below umbel, dichasial. Cyathia green, campanulate, 1.5-2 mm high, (1.5-)2-3 mm in diameter below glands, 4-5.5(-6) mm across appendages, densely villous outside with indument extending onto adaxial surface of appendages, glabrous within; peduncles (1-)2.5-5 mm long, glabrous or with few hairs; lobes deltate, fimbriate, 0.5-0.8 by ca. 0.7 mm, glabrous to villous; glands 5, green, drying brown, 0.8-1.2 mm long parallel to rim of cyathium, 0.4-0.7 mm wide, the margin slightly erose, hyaline; appendages white above, brown with white margins below, deltate to lanceolate, the base rounded, exceeding gland by (0.5-)0.7-1.7 mm, 1-1.3 mm wide at gland. Staminate flowers 20 to 25; bracteoles numerous, plumose. Gynophore strongly reflexed at maturity, glabrous, (2-)3.5-6 mm long. Capsule green, drying brown, 2.5-3 mm high, (3.5-)4-5 mm in diameter, pilose or glabrous, with persistent styles 1-1.2 mm long. Seeds black or dark brown, ovate, (2.2-)2.5-2.8 by 1.7-2 mm, ecarunculate, tuberculate, the tubercles widely and irregularly spaced, low, dull orange.

TYPE: Mexico, Oaxaca, on mountainside in pineland, above Tejocote, July 25, 1943, *C. L. Lundell 12288* (holotype, MICH; isotype, LL).

SPECIMENS EXAMINED. **Mexico.** DISTRITO FEDERAL: Desierto de los Leones, *Hernández X 651* (LL (2 sheets)). GUERRERO: Distr. Mina, Yesceros, 2000 m alt., oak and pine forest, *Hinton 14399, 14402* (LL, UC, US). OAXACA: N of Oaxaca on Hwy. 190, 1 mi S of km 495, *Breckon & Breckon 790* (DAV), 805 (DAV, GH); road between Ixtlán and Valle Nacional, *Breckon & Christman 631* (DAV); La Carbonera, *Conzatti 4010, 4010½* (US); Cerro de San Felipe, alt. 3000 m, *Conzatti & Gonzalez 255* (F), 255a (F, GH); Cumbre de la Carbonera, alt. 2640 m, *Conzatti & Gonzalez 257* (F, GH); de Papalo a la Cumbre de Cheve, Cuicatlán, alt. 2000 m, *Conzatti & Gonzales 775, 775a* (F, GH); ca. 3 km SE of Ixtlán de Juárez, Vivero Rancho Teja, alt. 2300-2400 m, relatively dry pine and oak woods with lots of litter, *Cruden 1102* (GH, MICH, TEX, UC), 1104 (UC); 13.5 mi SW of Sola de Vega along road to Puerto Escondido, *G. & J. Davidse 9660* (MO); ca. 40 mi N of Oaxaca, near Herradura de Oro, S of No-

chistlán, *Dressler 1793, 1794* (GH); 12 km N of Ixtlán de Juárez on road to Valle Nacional, Rte. 175, *King 2072* (MICH); on mountainside in pineland, above Tejocote, *Lundell 12287* (LL (2 sheets), MICH, UC), *12288* (LL, MICH), *12289* (LL (2 sheets), MICH, UC); above Vivero Rancho Teja (Hallberg Ranch), Ixtlán de Juárez, *McPherson 704, 705* (MICH); vic. of La Parada, alt. 7500–8500 ft, *Nelson 1013* (F. GH, US); Cerro Verde, vic. of San Luis Tultitlanapa, Puebla, *Purpus 3431* (UC); 23 km S of Ixtlán at km 35 on road from Oaxaca, alt. ca. 1500 m, hillside covered with *Quercus* scrub with understory of shrub Ericaceae, *Roe & Roe 2007* (MO); San Juan del Estado, alt. 7000 ft, *Smith et al. 26* (F. GH), *26a* (F); ca. 9 mi N of Telixtlahuaca along Hwy. 131, *Stevens 1335* (MICH); Hallberg's finca near Ixtlán, NE of Oaxaca, *Webster 11597* (MICH); ca. 15–16 mi by road NE of Teotitlán del Camino, approx. 18°10'N, 97°00'W, alt. 7100 ft, common in oak woods, *Webster et al. 17290* (MO). PUEBLA: above Coxcatlán between Apala and top of Cerro Chichiltepec, igneous and sedimentary rock outcrops with dark soils, primarily oak-pine forest, alt. ca. 2000–2500 m, *Smith et al. 3821* (F. US).

Euphorbia ixtlana is named after the town of Ixtlán de Juárez, Oaxaca, near which several of the collections were made. It is widespread in northern Oaxaca and adjacent areas of Puebla and Guerrero, and it occurs at medium elevations in pine and oak forests, where its associates also include *Arbutus*, *Clethra*, and *Sambucus* (label data from *Breckon & Christman 631* and *Stevens 1335*), as well as *Cuphea*, *Eryngium*, *Geranium*, *Monotropa*, and *Salvia* (*Cruden 1102*).

The new species strikingly resembles *Euphorbia sphaerorhiza* in aspect but may be distinguished by its glabrous or pilose (vs. retuscabrous) stems, spreading (vs. appressed) hairs on the cyathium, petaloid appendages that are brown on the lower surface (probably green in living plants) except for a narrow white margin (vs. completely white, or occasionally green and reduced), and irregularly tuberculate (vs. smooth) seeds. The coloration of the lower surface of the appendages is also characteristic of another close relative, *E. hintonii* L. C. Wheeler, known only from a restricted area in the western part of the state of Mexico, but that species differs in having much shorter (1–3 dm) stature, usually slightly cordate leaf bases in the inflorescence, shorter and broader leaves, and globose capsules.

A most spectacular feature of *Euphorbia ixtlana* is the extreme dimorphism of the leaves and bracts. One form is linear with entire margins, while the other is ovate with dentate margins. The margins of both forms are revolute; thus the teeth of the dentate form, which are acute, often appear rounded. The two leaf forms rarely appear together on the same plant (an exception is *Conzatti & Gonzalez 255a*) but are apparently both present at the same time within a single population. This is evident because, although the two forms are nearly always placed on separate herbarium sheets, both were often gathered by the same collector on the same day and at the same locality and were given adjacent, or nearly adjacent, collection numbers. Other than the shape and margin of the leaves, there are no differences between the two forms. According to the label of *Webster et al. 17290*, the linear- and broad-leaved forms are randomly mixed.

ACKNOWLEDGMENTS

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LITERATURE CITED

HUFT, M. J. 1979. A monograph of *Euphorbia* section *Tithymalopsis*. 276 pp. Unpubl. Ph.D. Thesis, University of Michigan.

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